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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,420	05/05/2006	Kouji Kametaka	6340-000072/US/NP	1683
27572	7590	08/09/2011	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			WAITS, ALAN B	
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BLOOMFIELD HILLS, MI 48303			3656	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/578,420

Applicant(s)

KAMETAKA ET AL.

Examiner

ALAN WAITS

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-13 is/are pending in the application.
- 4a) Of the above claim(s) 9-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7,8 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claims 7, 8, 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claim 7, lines 6-23, and claim 13, lines 6-25, recite method step limitations such as "fitting an inner ring", "arranging an outer member", "outwardly deforming a caulked portion" and "recutting the chamfered surface". It is unclear if Applicant intended to make the scope of the claims a method, or if the claims are still apparatus claims. In the instant office action, the claims are considered apparatus claims and the method steps are considered product-by-process claims for examination.

Regarding the limitations such as "fitting", "arranging", "deforming" etc., it is unclear what structure in the claim is performing the actions.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 7, 8 and 13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to two statutory classes. The claim starts as an apparatus claim with the "A bearing apparatus for a wheel of a vehicle" in claim 7, line 1, and claim 13,

line 1, and transitions to a method claim by reciting only method steps in claim 7, lines 6-23 and claim 13, lines 6-25. This mixes the statutory classes of an apparatus claim and a method claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 7 and 13, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Toda U.S. 2003/0072511.

Re clm 7 and 13, Toda discloses a bearing apparatus for a wheel of a vehicle comprising an inner member (1, Fig. 1) including a wheel hub (2) having an integrally formed wheel mounting flange (2c) at one end and a cylindrical portion (2a) axially extending from the wheel mounting flange, an inner ring (32) on the cylindrical portion, the inner ring including an end surface (right flat end of 32) substantially perpendicular to an axis of the bearing apparatus and an outer circumferential surface (32d), an outer member (33) around the inner member, double row rolling elements (34 and 35) freely rollably between the inner and outer members, a caulked portion (32a) at the end of the cylindrical portion of the wheel hub to abut against the end surface of the inner ring, a chamfered surface (32b, Fig. 3) positioned between the end surface and the outer circumferential surface of a back side of the inner ring.

The limitations "fitting an inner ring onto the cylindrical portion, arranging an outer member around the inner member, containing double row rolling elements freely rollably between the inner and outer members, securing the inner ring in an axial direction relative to the wheel hub, outwardly deforming a caulked portion at the end of the cylindrical portion of the wheel hub to abut against the end surface of the inner ring, cutting a chamfered surface positioned between the end surface and the outer circumferential surface of a back side of the inner ring, and recutting the chamfered surface after heat treatment so that the chamfered surface reduces stress concentrations due to gouges on the chamfered surface and prevents the generation of cracks from the starting point of the gouge" are product-by-process limitations. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

6. Claims 7, 8 and 13, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazaki et al. U.S. 6,280,096.

Re clm 7 and 13, Miyazaki discloses a bearing apparatus for a wheel of a vehicle comprising an inner member (2, Fig. 1) including a wheel hub having an integrally formed wheel mounting flange (6) at one end and a cylindrical portion (8) axially extending from the wheel mounting flange, an inner ring (3) on the cylindrical portion, the inner ring including an end surface substantially perpendicular to an axis of

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the bearing apparatus and an outer circumferential surface, an outer member (4) around the inner member, double row rolling elements (5) freely rollably between the inner and outer members, a caulked portion (19) at the end of the cylindrical portion of the wheel hub to abut against the end surface of the inner ring, a chamfered surface (right top end of 30, Fig. 3) positioned between the end surface and the outer circumferential surface of a back side of the inner ring.

The limitations "fitting an inner ring onto the cylindrical portion, arranging an outer member around the inner member, containing double row rolling elements freely rollably between the inner and outer members, securing the inner ring in an axial direction relative to the wheel hub, outwardly deforming a caulked portion at the end of the cylindrical portion of the wheel hub to abut against the end surface of the inner ring, cutting a chamfered surface positioned between the end surface and the outer circumferential surface of a back side of the inner ring, and recutting the chamfered surface after heat treatment so that the chamfered surface reduces stress concentrations due to gouges on the chamfered surface and prevents the generation of cracks from the starting point of the gouge" are product-by-process limitations. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

Re clm 8, Miyazaki further discloses that the wheel hub is formed with an inner raceway surface (7, Fig. 1) on its outer circumferential surface and a wheel hub outer circumferential region from a base of the wheel mounting flange to a cylindrical portion through the inner raceway surface is hardened by high frequency induction hardening to have a surface hardness of 54-64 HRC, said caulked portion remains as a non-quenched portion having a surface hardness of less than 24 HRC after forging (col. 8, lines 27-29) and hoop stress generated within the inner ring by plastic deformation of the end of the cylindrical portion is limited to less than 300 MPa.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 7 and 13, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Toda U.S. 2003/0072511 in view of Nonaka U.S. 6,840,722.

Re clm 7 and 13, Toda discloses a bearing apparatus for a wheel of a vehicle comprising an inner member (1, Fig. 1) including a wheel hub (2) having an integrally formed wheel mounting flange (2c) at one end and a cylindrical portion (2a) axially extending from the wheel mounting flange, an inner ring (32) on the cylindrical portion, the inner ring including an end surface (right flat end of 32) substantially perpendicular to an axis of the bearing apparatus and an outer circumferential surface (32d), an outer

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member (33) around the inner member, double row rolling elements (34 and 35) freely rollably between the inner and outer members, a caulked portion (32a) at the end of the cylindrical portion of the wheel hub to abut against the end surface of the inner ring, a chamfered surface (32b, Fig. 3) positioned between the end surface and the outer circumferential surface of a back side of the inner ring.

The limitations "fitting an inner ring onto the cylindrical portion, arranging an outer member around the inner member, containing double row rolling elements freely rollably between the inner and outer members, securing the inner ring in an axial direction relative to the wheel hub, outwardly deforming a caulked portion at the end of the cylindrical portion of the wheel hub to abut against the end surface of the inner ring, cutting a chamfered surface positioned between the end surface and the outer circumferential surface of a back side of the inner ring, and recutting the chamfered surface after heat treatment so that the chamfered surface reduces stress concentrations due to gouges on the chamfered surface and prevents the generation of cracks from the starting point of the gouge" are product-by-process limitations. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

Assuming that recutting the chamfered surface does change the structure of the chamfered surface, Toda does not disclose recutting the chamfered surface.

Nonaka teaches machining an element where a surface is formed as a cut surface and then recutting the surface to debur the surface (col. 13, lines 21-29).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Toda and provide recutting of the chamfered surface for the purpose of deburring the surface, as taught by Nonaka.

9. Claims 7, 8 and 13, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki U.S. 6,280,096 in view of Nonaka U.S. 6,840,722.

Re clm 7 and 13, Miyazaki discloses a bearing apparatus for a wheel of a vehicle comprising an inner member (2, Fig. 1) including a wheel hub having an integrally formed wheel mounting flange (6) at one end and a cylindrical portion (8) axially extending from the wheel mounting flange, an inner ring (3) on the cylindrical portion, the inner ring including an end surface substantially perpendicular to an axis of the bearing apparatus and an outer circumferential surface, an outer member (4) around the inner member, double row rolling elements (5) freely rollably between the inner and outer members, a caulked portion (19) at the end of the cylindrical portion of the wheel hub to abut against the end surface of the inner ring, a chamfered surface (right top end of 30, Fig. 3) positioned between the end surface and the outer circumferential surface of a back side of the inner ring.

The limitations “fitting an inner ring onto the cylindrical portion, arranging an outer member around the inner member, containing double row rolling elements freely rollably between the inner and outer members, securing the inner ring in an axial direction

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relative to the wheel hub, outwardly deforming a caulked portion at the end of the cylindrical portion of the wheel hub to abut against the end surface of the inner ring, cutting a chamfered surface positioned between the end surface and the outer circumferential surface of a back side of the inner ring, and recutting the chamfered surface after heat treatment so that the chamfered surface reduces stress concentrations due to gouges on the chamfered surface and prevents the generation of cracks from the starting point of the gouge" are product-by-process limitations. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

Assuming that recutting the chamfered surface does change the structure of the chamfered surface, Miyazaki does not disclose recutting the chamfered surface.

Nonaka teaches machining an element where a surface is formed as a cut surface and then recutting the surface to debur the surface (col. 13, lines 21-29).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Miyazaki and provide recutting of the chamfered surface for the purpose of deburring the surface, as taught by Nonaka.

Re clm 8, Miyazaki further discloses that the wheel hub is formed with an inner raceway surface (7, Fig. 1) on its outer circumferential surface and a wheel hub outer circumferential region from a base of the wheel mounting flange to a cylindrical portion

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through the inner raceway surface is hardened by high frequency induction hardening to have a surface hardness of 54-64 HRC, said caulked portion remains as a non-quenched portion having a surface hardness of less than 24 HRC after forging (col. 8, lines 27-29) and hoop stress generated within the inner ring by plastic deformation of the end of the cylindrical portion is limited to less than 300 MPa.

Response to Arguments

10. Applicant's arguments filed May 16, 2011 have been fully considered but they are not persuasive.

Regarding Toda, Applicant argues that the Toda reference fails to illustrate any type of chamfered surface of the inner ring, however, 32b of Figure 2 clearly shows a chamfered corner on the inner ring. Applicant further argues that recutting the chamfered surface imparts a distinctive structural characteristic to the final product, however, this is a product-by-process limitation which does not impart any structural characteristic to the final product. Furthermore, Applicant merely states that the chamfered cutting and recutting of the chamfered surface changes the structure of the inner ring, but does not give any evidence to support this statement.

Regarding Miyazaki, Applicant argues that he does not illustrate the cut and recut surface positioned between the end face and the outer circumferential surface of the back side of the inner ring, however, the corner of element 3, between 30 and 26 at the top right corner of Figure 3 clearly shows a chamfered surface. As stated above, cutting and recutting the chamfered surface is a product-by-process limitation which does not impart any structural characteristic to the final product. Furthermore, Applicant merely

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states that the chamfered cutting and recutting of the chamfered surface changes the structure of the inner ring, but does not give any evidence to support this statement

Regarding Toda in view of Nonaka and Miyazaki in view of Nonaka, Applicant argues that these combinations fail to illustrate Applicants' claims however Nonaka teaches recutting to debur cut surfaces. Even if Applicant were correct that recutting provides a structural difference over Toda and Miyazaki, the combination of these two with Nonaka provides for exactly that structural difference.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALAN WAITS whose telephone number is (571)270-

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3664. The examiner can normally be reached on Monday through Friday 7:30 am to 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alan B Waits/
Examiner, Art Unit 3656

/Thomas R. Hannon/
Primary Examiner, Art Unit 3656